

REMARKS

Status of Claims

Claims 1, 2, 4-30 and 55 were pending at the time of this Office Action (OA) and were rejected. Claims 1 and 55 have been amended. Support for the claim amendments can be found throughout the specification and claims as originally filed. For example, support for the amendments to claims 1 and 55 can be found, *inter alia*, in the Specification at pages 20-21 and Figures 1-3. Therefore, no new matter has been added by way of these amendments.

The Rejection Under 35 U.S.C. § 102

Claims 1, 2, 4-30 and 55 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Xing et al. (U.S. Patent No. 7,767,438; hereinafter “Xing”). OA at page 2. Applicants respectfully traverse this rejection for the reasons set forth below.

The legal standard for anticipation under 35 U.S.C. § 102 is one of strict identity. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 63 U.S.P.Q.2d 1597 (Fed. Cir. 2002). To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention. *In re Paulson*, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) (citing *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990)). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP §2131.

Applicants respectfully submit the reaction spaces of Xing are formed between the projections on the microarray chip and the projections on the cover. *See* column 12, lines 4-10; Figures 1-2 of Xing. In contrast, the presently claimed invention recites reaction spaces formed between the microarray areas on the microarray chip and the projections of the cover. To further clarify the claimed subject matter, claims 1 and 55 have been amended to recite a microarray device “wherein a plurality of reaction spaces are formed between said microarray areas of said microarray chip and said projections of said cover, and the volumes of said reaction spaces are substantially

identical and controllable by the thickness of said enclosure, the height of said projections and the areas of said projections.”

Therefore, the structure disclosed by Xing does not contain each and every elements of the presently claimed invention. Accordingly, Xing fails the strict identity standard for anticipation and this rejection under 35 U.S.C. § 102(e) should properly be withdrawn.

The Rejection Under 35 U.S.C. § 103

Claims 1, 2, 4-30 and 55 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Webb et al. (U.S. Patent No. 7,332,328; hereinafter “Webb”) in view of MacBeath et al. (U.S. Patent No. 7,063,979; hereinafter “MacBeath”) or Oldenburg (U.S. Patent No. 7,025,120; hereinafter “Oldenburg”). Applicants respectfully traverse this rejection for the reasons set forth below.

The initial burden to make a *prima facie* case of obviousness is on the Examiner. *In re Bell*, 991 F.2d 781, 783 (Fed. Cir. 1993). To make a *prima facie* case of obviousness, the teachings of the prior art should have suggested the claimed subject matter to the person of ordinary skill in the art, and all the claim limitations must be taught or suggested in the references cited by the Examiner. *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000). Moreover, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed. *See KSR Intl Co. v. Teleflex, Inc.*, 550 U.S. 398, 420 (2007).

Webb in view of MacBeath

It is said that Webb teaches a microarray device having a plurality of microarray areas and a cover having a plurality of projections wherein a plurality of microarray reaction spaces are formed between the chip and projections and wherein the volumes of the reaction spaces are identical and controllable by the height of the cover and projections. OA at page 4. It is said that Webb further teaches that a pre-formed seal is placed at the base of each column and/or the opening of each well and/or around the periphery of the multi-well plate. OA at page 4. It is said that the

sealing enclosure of Webb appears to only differ from that claimed in that the reference teaches multiple seals forming the enclosure. OA at page 4. It is further said that using a one-piece construction for multiple seals of Webb would have merely been a matter of obvious engineering choice especially based on the well known use of single-constructed enclosures as taught by MacBeath. OA at pages 4-5. Applicants respectfully disagree.

As an initial matter, claims 1 and 55 have been amended to recite a microarray device “wherein a plurality of reaction spaces are formed between said microarray areas of said microarray chip and said projections of said cover, and the volumes of said reaction spaces are substantially identical and controllable by the thickness of said enclosure, the height of said projections and the areas of said projections.” Webb discloses a device having a support structure with a planar surface, and a plurality of microcolumns which project away from the planar surface and fit into wells of a microtiter plate. *See* Webb at column 2, lines 31-67. Webb does not disclose the enclosure in the presently claimed invention, which not only functions as a sealing, but also forms the reaction spaces between the microarray areas and the projections on the cover. It is said that Webb teaches seals forming micro-environments and therefore, the enclosure of Webb is very similar to that claimed. OA at page 13. Applicants respectfully disagree. As stated by Webb, the seal is designed to conform to the upper rim of a microtiter well and seal the microtiter well when the microcolumn is introduced into the microtiter well. *See* Webb at column 10, lines 4-7; Figure 5B. Therefore, the seals disclosed by Webb are different from the enclosure of the presently claimed invention, which not only functions as a seal, but also forms the reaction spaces between the microarray areas and the projections on the cover.

MacBeath fails to cure the deficiency of Webb because MacBeath does not disclose the enclosure as claimed in the present invention. MacBeath discloses a bottomless microtiter plate combined with substrates having microarrays through one or more perforated gaskets in such a way that the individual microarrays end up at the bottom of different wells of the plate, each separated from the other by a water-tight seal. MacBeath at column 1, line 54 – column 2, line 11. However, the bottomless microtiter plate of MacBeath does not form a plurality of reaction spaces. Therefore,

combining the teachings of Webb and MacBeath does not teach or suggest all the limitations of the presently claimed invention.

Further, one of ordinary of skill in the art would not be motivated to combine the teachings of MacBeath with those of Webb because doing so would have rendered the intended purpose of Webb unsatisfactory. *See* MPEP § 2142.01 ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.") (citations omitted). The bottomless microtiter plate disclosed by MacBeath cannot be used to substitute the microtiter plate disclosed by Webb, as doing so would result in a structure unsuitable for the function of the Webb device: forming a plurality of reaction chambers for microarrays.

It is said that the combination of Webb and MacBeath is proper because Webb is especially interested in sealing individual wells/microarray reaction area, and gaskets forming a plurality of microenvironments were well known in the art as taught by MacBeath. OA at pages 13-14. Applicants respectfully disagree. As discussed above, the difference between Webb and the presently claimed invention is not that of the individual seals between the microtiter well and microcolumn, but the enclosure that not only functions as a seal, but also forms the reaction spaces between the microarray areas and the projections on the cover. Therefore, Webb needs to be modified with the bottomless microtiter plate disclosed by MacBeath to arrive at the presently claimed invention, not just the one-piece construction of multi-well seals as the Examiner stated. OA at page 14. In the absence of any motivation to combine the teachings of the references, neither the references nor the state of the art can provide a reasonable expectation of success for such a modification.

Webb in view of Oldenburg

It is said that Webb teaches a device comprising micro-environments and individual temperature control and that Oldenburg teaches a device comprising a plurality of reaction spaces and a cover having a plurality of projections wherein an enclosure (gasket 26) is attached to the reaction spaces and cover thereby providing individual temperature control of individual wells by

application or removal of heat via the projections. OA at page 5. It is further said that it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the cover and gasket of Oldenburg to the device of Webb. OA at page 5. Applicants respectfully disagree.

As discussed above, the difference between Webb and the presently claimed invention is not that of the individual seals between the microtiter well and microcolumn, but the enclosure that not only functions as a seal, but also forms the reaction spaces between the microarray areas and the projections on the cover. Thus, modifying Webb with the gasket of Oldenburg does not cure the deficiency of Webb.

Therefore, combining the teachings of Webb with those of MacBeath or Oldenburg does not teach or suggest the presently claimed invention. Further, modifying Webb with the teachings of MacBeath would have rendered the intended purpose of Webb unsatisfactory. Accordingly, the Examiner has failed to make a *prima facie* case of obviousness, and this rejection under 35 U.S.C. § 103(a) should properly be withdrawn.

The Rejection for Double-Patenting

Claims 1, 2, 4-30 and 55 have been rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-25 of Patent No. 7,767,438, "Xing". Applicant submits herewith a Terminal Disclaimer over Xing, which is sufficient to overcome the double patenting rejection raised in the final Office Action.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket No. 514572002100. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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